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PATENT ABSTRACTS OF JAPAN

(11)Publication number : 10-126656

(43)Date of publication of application : 15.05.1998

(51)Int.Cl.

H04N 5/225

G03B 17/18

H05K 7/00

(21)Application number : 08-275159

(71)Applicant : SONY CORP

(22)Date of filing : 18.10.1996

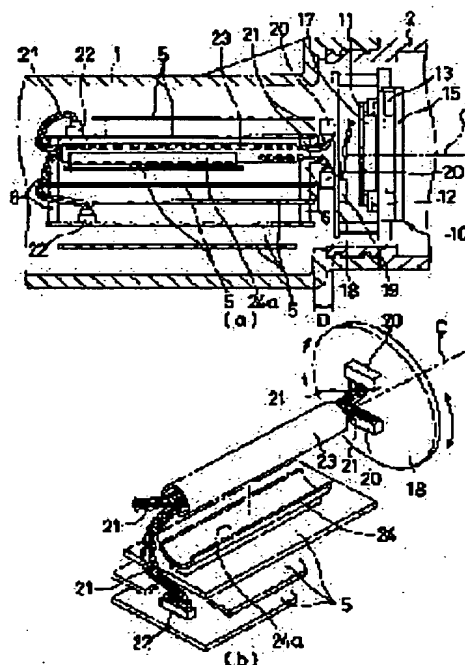
(72)Inventor : MURANAKA YASUHIRO

(54) VIEW FINDER FOR CAMERA

(57)Abstract:

PROBLEM TO BE SOLVED: To attain wiring between a main body and a rotary side at a low cost within a narrow space with respect to the view finder incorporated with a liquid crystal display device.

SOLUTION: An LCD container case 2 is provided on the top end side of a main body case 1 freely turnably, and a liquid crystal display device 13 and a relay wiring board 18 are provided in the LCD container case 2. While wiring for the liquid crystal display device 13 or the like is led to the relay wiring board 18, the relay wiring board 18 and a main body side wiring board 5 in the main body case 1 are interconnected by a plurality of signal cables 21. A plurality of the signal cables 21 are bundled by a tube 23 and the tube 23 is positioned by a guide member 24 that allows only turning.



LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

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CLAIMS

[Claim(s)]

[Claim 1] It prepares in the nose-of-cam side of the main part case which contained the main part side patchboard free [rotation of a LCD receipt case]. While establishing a liquid crystal display object in this LCD receipt case, the patchboard for relay is prepared. Wiring of a rotation side electrical part including the aforementioned liquid crystal display object is led to this patchboard for relay. The viewfinder of the camera characterized by what it connected by two or more signal cables, between the aforementioned patchboard for relay and the aforementioned main part side patchboards was governed through two or more of these signal cables in the tube, and this tube was positioned for to allow only rotation by the guide member.

[Claim 2] It is the viewfinder of the camera according to claim 1 characterized by having connected by two or more connectors and having arranged two or more of these connectors near the center of rotation of the aforementioned patchboard for relay between the end of two or more aforementioned signal cables, and the aforementioned patchboard for relay.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] this invention relates to the viewfinder of the camera having the liquid crystal display object.

[0002]

[Description of the Prior Art] There are a thing with a built-in cathode-ray tube and a thing of a liquid crystal display inside-of-the-body warehouse in the electric-type viewfinder of a camera. It became enlargement of a viewfinder and the harness was easily taken about to the few space in a viewfinder, and the thing with a built-in cathode-ray tube interfered with surrounding parts, and was disconnected in many cases. If the thing of this point and a liquid crystal display inside-of-the-body warehouse was in some which are suitable also for the miniaturization of a viewfinder and perform signal transduction by the side of a main part and rotation through a flexible substrate, the above troubles were seldom produced.

[0003]

[Problem(s) to be Solved by the Invention] However, there was a problem that become cost quantity when a flexible substrate is used for the circumference of length of wiring, and a flexible substrate became broad when there are many numbers of a signal line (20-30 [for example,]), and a latus space was needed.

[0004] Then, this invention makes it a technical problem to be in the thing of a liquid crystal display inside-of-the-body warehouse, and to offer the viewfinder of the camera which is cost ** and made possible leading about of wiring with a main part side and a rotation side in the narrow space.

[0005]

[Means for Solving the Problem] The viewfinder of the camera of this invention for attaining the above-mentioned technical problem It prepares in the nose-of-cam side of the main part case which contained the main part side patchboard free [rotation of a LCD receipt case]. While establishing a liquid crystal display object in this LCD receipt case, the patchboard for relay is prepared. Wiring of a rotation side electrical part including the aforementioned liquid crystal display object is led to this patchboard for relay. The aforementioned main part connects between patchboards with the aforementioned patchboard for relay by two or more signal cables, it bundles through two or more of these signal cables in a tube, and this tube is positioned to allow only rotation by the guide member.

[0006] That is, leading about of wiring with a main part side and a rotation side is cost ** in order to carry out by two or more signal cables, and in order to bundle and allot two or more signal cables by the tube, a narrow space is sufficient for it.

[0007]

[Embodiments of the Invention] Hereafter, the gestalt of operation of this invention is explained using a drawing. 1 operation gestalt of this invention is shown in drawing 4 from drawing 1.

[0008] The appearance perspective diagram of the viewfinder of a video camera is shown in drawing 2. In drawing 2, the main part case 1 by the side of the main part of a viewfinder is fixed to the main part side of a camera which is not illustrated, and the LCD receipt case 2 by the side of rotation is attached in the direction of an arrow free [rotation] at the nose-of-cam side of the main part case 1. A lens holder 3 and eye-cup 4 grade are attached in the nose-of-cam side of this LCD receipt case 2, and the peep position of a viewfinder is adjusted by carrying out adjustable [of the rotation position by the side of rotation of a LCD receipt case etc.].

[0009] The important section cross section of a viewfinder is shown in the decomposition perspective diagram by the side of the main part of a viewfinder, and drawing 1 (a) at drawing 3, respectively. drawing 3 and drawing 1 (a) - setting - the above-mentioned main part case 1 - an upper case - a member - 1a and a bottom case - a member - it consists of 1b and bottom covering 1c In this main part case 1, two or more main part side patchboards 5 are contained, and the main part side patchboard 5 of this plurality separates a proper space, and is arranged by the spacer 6 grade at abbreviation parallel. Electronic-parts 7 grad is mount d on each main part side patchboard 5, and a desired circuit is constituted, resp ctiv ly, and it connects el ctically through th fl xible substrat 8 or the connector between the arbitrary main part side patchboards 5.

[0010] drawing 4 - th part by the side of rotation of a vi wfinder - the solution perspectiv diagram is shown In drawing 4 and drawing 1 (a), the LCD block object 10 is contain d in the LCD rec ipt case 2. Th back substrate 11, th 1st lectrode holder 12, the liquid crystal display object 13, the wiring substrat 14, the 2nd lectrode hold r 15, and the plat 16 for a display are attached, and this LCD block object 10 is constituted. The back light 17 is

attached in the back substrate 11. Light Emitting Diode for a display (not shown) is attached in the wiring substrate 14.

[0011] Moreover, the patchboard 18 for relay is fixed to the main part case 1 side within the LCD receipt case 2, a connector 19 is formed in the whole surface of this patchboard 18 for relay, and wiring of the liquid crystal display object 13, a back light 17, and Light Emitting Diode for a display (not shown), i.e., wiring of a rotation side electrical part, is connected to this connector 19. moreover, the patchboard 18 for relay — on the other hand — being alike — as shown in drawing 1 (b) in detail, two L type connectors 20 are formed, and it is near the center of rotation C of the patchboard 18 for relay, and these two L type connectors 20 are arranged so that it may face mutually. The end side of two or more signal cables 21 is connected to this each L type connector 20, and the other end side of two or more of these signal cables 21 is connected to the connector 22 of the main part side patchboard 5. That is, it connects electrically by two or more signal cables 21 between the patchboard 18 for relay, and the main part side patchboard 5. Moreover, it lets two or more signal cables 21 pass in one tube 23, and they are bundled. As shown in drawing 1 (a) in detail, this tube 23 is arranged between the adjoining main part side patchboards 5, and is located on the abbreviation center-of-rotation shaft C of the patchboard 18 for relay. the guide which has semicircle arc receptacle side 24a between the above-mentioned main part side patchboards 5 which carry out contiguity — a member 24 is fixed — having — this guide — the tube 23 is laid in semicircle arc receptacle side 24a of a member 24 a tube 23 — a guide — it is positioned where only rotation is permitted by the member 24

[0012] Next, an operation of the above-mentioned composition is explained. If LCD receipt case 2 grade is rotated in the direction of an arrow of drawing 2 to carry out adjustable [of the peep position of a viewfinder], the relay patchboard 5 will rotate similarly with the LCD block object 10. although two or more signal cables 21 which connect a main part side by this rotation also rotate, two or more signal cables 21 are bundled by the tube 23 — having — and this tube 23 — a guide — since it is positioned by the member 24, it rotates smoothly, without interfering with surrounding parts. Therefore, two or more signal cables 21 are not disconnected. Moreover, since a tube 23 is located on the abbreviation center-of-rotation shaft C of the patchboard 18 for relay, rotation is performed more smoothly. And leading about of wiring with a main part side and a rotation side is cost ** in order to carry out by two or more signal cables 21, and a narrow wiring space is sufficient for it in order to bundle and allot two or more signal cables 21 by the tube 23.

[0013] Moreover, since two L type connectors 20 of the patchboard 18 for relay are arranged near the center of rotation C of the patchboard 18 for relay, and they have been arranged so that it may face mutually and two or more signal cables 21 of its settle on the center of rotation simply, the space D of the patchboard 18 for relay and the main part side patchboard 5 (shown in drawing 1 (a).) can be stopped to the minimum.

[0014]

[Effect of the Invention] It prepares in the nose-of-cam side of the main part [which was described above] case which contained the main part side patchboard according to [like] this invention free [rotation of a LCD receipt case]. While establishing a liquid crystal display object in this LCD receipt case, the patchboard for relay is prepared. Wiring of a rotation side electrical part including the aforementioned liquid crystal display object is led to this patchboard for relay. Since the aforementioned main part connected between patchboards with the aforementioned patchboard for relay by two or more signal cables, it bundled through two or more of these signal cables in the tube and this tube was positioned to allow only rotation by the guide member. It is in the HYU finder of a liquid crystal display inside-of-the-body warehouse, and is effective in being cost ** and being able to perform leading about of wiring with a main part side and a rotation side in a narrow space.

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TECHNICAL FIELD

[The technical field to which invention belongs] this invention relates to the viewfinder of the camera having the liquid crystal display object.

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PRIOR ART

[Description of the Prior Art] There are a thing with a built-in cathode-ray tube and a thing of a liquid crystal display inside-of-the-body warehouse in the electric-type viewfinder of a camera. It became enlargement of a viewfinder and the harness was easily taken about to the few space in a viewfinder, and the thing with a built-in cathode-ray tube interfered with surrounding parts, and was disconnected in many cases. If the thing of this point and a liquid crystal display inside-of-the-body warehouse was in some which are suitable also for the miniaturization of a viewfinder and perform signal transduction by the side of a main part and rotation through a flexible substrate, the above troubles were seldom produced.

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EFFECT OF THE INVENTION

[Effect of the Invention] It prepares free [rotation of a LCD receipt case] to the nose-of-cam side of the main part [which was described above] case which contained the main part side patchboard by this invention like. While establishing a liquid crystal display object in this LCD receipt case, the patchboard for relay is prepared. Wiring of a rotation side electrical part including the aforementioned liquid crystal display object is led to this patchboard for relay. The aforementioned main part connected between patchboards with the aforementioned patchboard for relay by two or more signal cables, it bundled through two or more of these signal cables in the tube, and this tube was positioned to allow only rotation by the guide member. Therefore, it is in the HYU finder of a liquid crystal display inside-of-the-body warehouse, and is effective in being cost ** and being able to perform leading about of wiring with a main part side and a rotation side in a narrow space.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] However, there was a problem that became cost quantity when a flexible substrate is used for the circumference of length of wiring, and a flexible substrate became broad when there are many numbers of a signal line (20-30 [for example,]), and a large space was needed.

[0004] Then, this invention makes it a technical problem to be in the thing of a liquid crystal display inside-of-the-body warehouse, and to offer the viewfinder of the camera which is cost ** and made possible leading about of wiring with a main part side and a rotation side in the narrow space.

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MEANS

[Means for Solving the Problem] The viewfinder of the camera of this invention for attaining the above-mentioned technical problem It prepares in the nose-of-cam side of the main part case which contained the main part side patchboard free [rotation of a LCD receipt case]. While establishing a liquid crystal display object in this LCD receipt case, the patchboard for relay is prepared. Wiring of a rotation side electrical part including the aforementioned liquid crystal display object is led to this patchboard for relay. The aforementioned main part connects between patchboards with the aforementioned patchboard for relay by two or more signal cables, it bundles through two or more of these signal cables in a tube, and this tube is positioned to allow only rotation by the guide member.

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[0010] drawing 4 — the part by the side of rotation of a viewfinder — the solution perspective diagram is shown in drawing 4 and drawing 1 (a), the LCD block object 10 is contained in the LCD receipt case 2. The back substrate 11, the 1st electrode holder 12, the liquid crystal display object 13, the wiring substrate 14, the 2nd electrode holder 15, and the plate 16 for a display are attached, and this LCD block object 10 is constituted. The back light 17 is attached in the back substrate 11. Light Emitting Diode for a display (not shown) is attached in the wiring substrate 14.

[0011] Moreover, the patchboard 18 for relay is fixed to the main part case 1 side within the LCD receipt case 2, a connector 19 is formed in the whole surface of this patchboard 18 for relay, and wiring of the liquid crystal display object 13, a back light 17, and Light Emitting Diode for a display (not shown), i.e., wiring of a rotation side electrical part, is connected to this connector 19. moreover, the patchboard 18 for relay — on the other hand — being alike — as shown in drawing 1 (b) in detail, two L type connectors 20 are formed, and it is near the center of rotation C of the patchboard 18 for relay, and these two L type connectors 20 are arranged so that it may face mutually The end side of two or more signal cables 21 is connected to this each L type connector 20, and the other end side of two or more of these signal cables 21 is connected to the connector 22 of the main part side patchboard 5. That is, it connects electrically by two or more signal cables 21 between the patchboard 18 for relay, and the main part side patchboard 5. Moreover, it lets two or more signal cables 21 pass in one tube 23, and they are bundled. As shown in drawing 1 (a) in detail, this tube 23 is arranged between the adjoining main part side patchboards 5, and is located on the abbreviation center-of-rotation shaft C of the patchboard 18 for relay. the guide which has semicircle arc receptacle side 24a between the above-mentioned main part side patchboards 5 which carry out contiguity — a member 24 is fixed — having — this guide — the tube 23 is laid in semicircle arc receptacle side 24a of a member 24 a tube 23 — a guide — it is positioned where only rotation is permitted by the member 24

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the perspective diagram (operation gestalt) in which (a) shows the important section cross section of a viewfinder, and (b) shows the leading-about state of wiring between a main part side and a rotation side.

[Drawing 2] The appearance perspective diagram of a viewfinder (operation gestalt).

[Drawing 3] The decomposition perspective diagram by the side of the main part of a viewfinder (operation gestalt).

[Drawing 4] A viewfinder's rotation side is a solution perspective diagram (operation gestalt) a part.

[Description of Notations]

1 — a main part case, a 2 — LCD receipt case, 5 — main part side patchboard, and 13 — a liquid crystal display object, the patchboard for 18 — relay, 20 — L type connector (connector), and 21 — a signal cable, 23 — tube, and 24 — guide — a member

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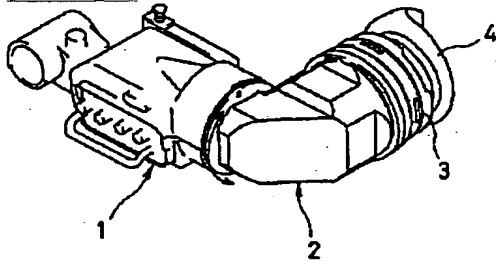
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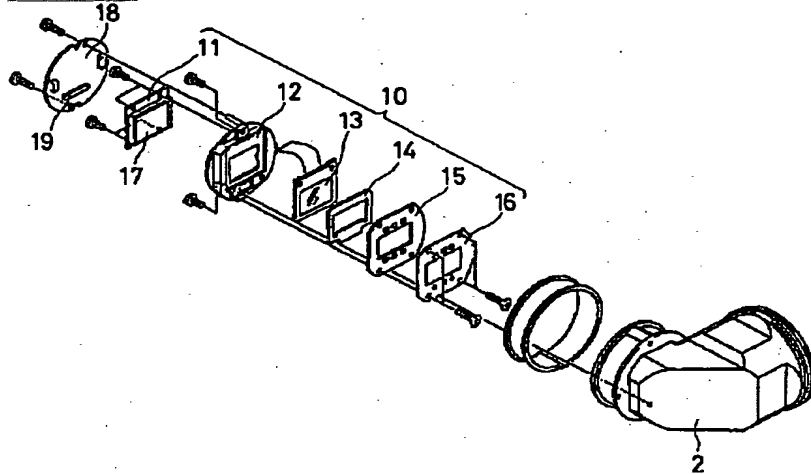
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DRAWINGS

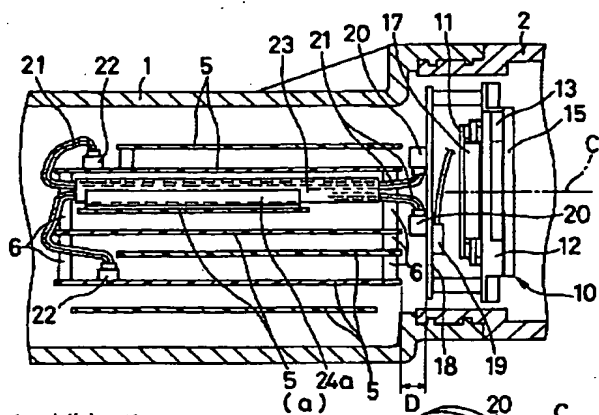
[Drawing 2]



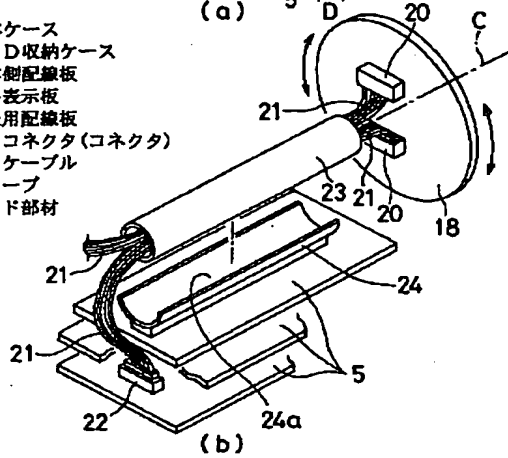
[Drawing 4]



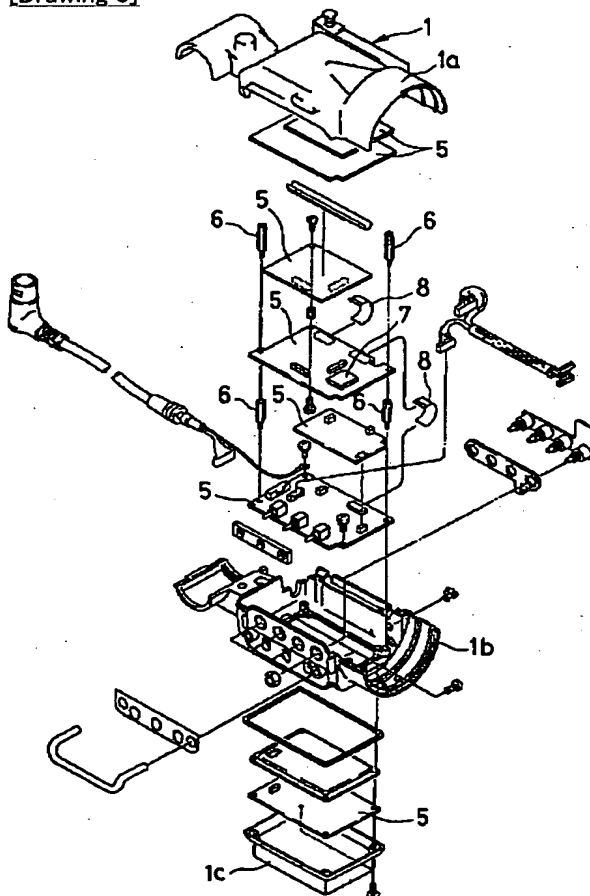
[Drawing 1]



- 1…本体ケース
 2…LCD収納ケース
 5…本体側配線板
 13…液晶表示板
 18…中継用配線板
 20…L型コネクタ(コネクタ)
 21…信号ケーブル
 23…チューブ
 24…ガイド部材



[Drawing 3]



[Translation don .]

(19) 日本国特許庁 (J P)

(12) 公開特許公報 (A)

(11) 特許出願公開番号

特開平10-126656

(43) 公開日 平成10年(1998) 5月15日

(51) Int.Cl.⁶

識別記号

F I

H 0 4 N 5/225

H 0 4 N 5/225

B

G 0 3 B 17/18

G 0 3 B 17/18

Z

H 0 5 K 7/00

H 0 5 K 7/00

G

審査請求 未請求 請求項の数 2 O L (全 4 頁)

(21) 出願番号

特願平8-275159

(22) 出願日

平成8年(1996)10月18日

(71) 出願人 000002185

ソニー株式会社

東京都品川区北品川6丁目7番35号

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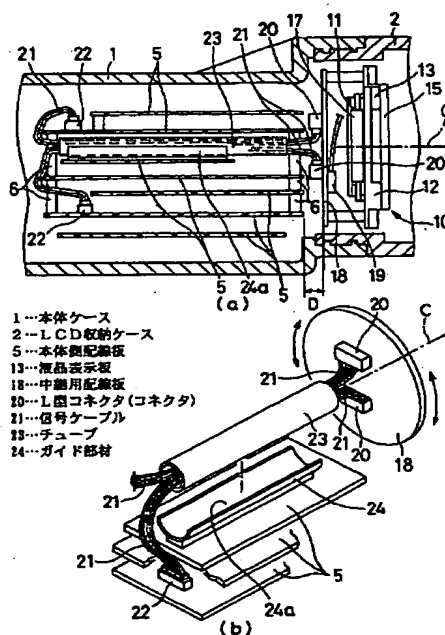
(74) 代理人 弁理士 志賀 富士弥 (外1名)

(54) 【発明の名称】 カメラのビューファインダ

(57) 【要約】

【課題】 液晶表示体内蔵のビューファインダにあつて、本体側と回転側との配線の引き回しをコスト安で、且つ、狭いスペースで可能とする。

【解決手段】 本体ケース1の先端側にLCD収納ケース2を回転自在に設け、このLCD収納ケース2内に液晶表示体13と共に中継用配線板18を設け、この中継用配線板18に液晶表示体13等の配線を導く一方、中継用配線板18と本体ケース1内の本体側配線板5との間を複数の信号ケーブル21で接続し、この複数の信号ケーブル21をチューブ23で束ね、このチューブ23を回転のみを許容するガイド部材24で位置決めする。



【特許請求の範囲】

【請求項1】 本体側配線板を収納した本体ケースの先端側にLCD収納ケースを回転自在に設け、このLCD収納ケース内に液晶表示体を設けると共に中継用配線板を設け、この中継用配線板に前記液晶表示体を含む回転側電気部品の配線を導き、前記中継用配線板と前記本体側配線板との間を複数の信号ケーブルで接続し、この複数の信号ケーブルをチューブ内に通して束ね、このチューブをガイド部材で回転のみを許すべく位置決めした、ことを特徴とするカメラのビューファインダ。

【請求項2】 前記複数の信号ケーブルの一端と前記中継用配線板との間は、複数のコネクタで接続し、この複数のコネクタを前記中継用配線板の回転中心の近傍に配置したことを特徴とする請求項1に記載のカメラのビューファインダ。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、液晶表示体内蔵したカメラのビューファインダに関する。

【0002】

【従来の技術】カメラの電気式ビューファインダには陰極線管内蔵のものと液晶表示体内蔵のものがある。陰極線管内蔵のものはビューファインダの大型化となり、且つ、ビューファインダ内の少ないスペースにハーネスが無造作に引き回されて周りの部品と干渉し断線する場合が多かった。この点、液晶表示体内蔵のものはビューファインダの小型化にも適し、又、本体側と回転側との信号伝達をフレキシブル基板を介して行うものにあつては上述のような問題点は余り生じなかった。

【0003】

【発明が解決しようとする課題】しかしながら、配線の引き回りにフレキシブル基板を用いた場合にはコスト高となり、又、信号線の本数が多い場合（例えば20～30本）にはフレキシブル基板が幅広となって広いスペースが必要になるという問題があった。

【0004】そこで、本発明は、液晶表示体内蔵のものにあつて、本体側と回転側との配線の引き回しをコスト安で、且つ、狭いスペースで可能としたカメラのビューファインダを提供することを課題とする。

【0005】

【課題を解決するための手段】上記課題を達成するための本発明のカメラのビューファインダは、本体側配線板を収納した本体ケースの先端側にLCD収納ケースを回転自在に設け、このLCD収納ケース内に液晶表示体を設けると共に中継用配線板を設け、この中継用配線板に前記液晶表示体を含む回転側電気部品の配線を導き、前記中継用配線板と前記本体側配線板との間を複数の信号

ケーブルで接続し、この複数の信号ケーブルをチューブ内に通して束ね、このチューブをガイド部材で回転のみを許すべく位置決めしたものである。

【0006】即ち、本体側と回転側との配線の引き回しは複数の信号ケーブルで行うためコスト安であり、又、複数の信号ケーブルをチューブで束ねて配するために狭いスペースで足りる。

【0007】

【発明の実施の形態】以下、本発明の実施の形態を図面を用いて説明する。図1から図4には本発明の一実施形態が示されている。

【0008】図2にはビデオカメラのビューファインダの外観斜視図が示されている。図2において、ビューファインダの本体側の本体ケース1は図示しないカメラ本体側に固定され、本体ケース1の先端側には回転側のLCD収納ケース2が矢印方向に回転自在に取り付けられている。このLCD収納ケース2の先端側にはレンズホルダ3、アイカップ4等が取り付けられ、LCD収納ケース等の回転側の回転位置を可変することによってビューファインダの覗き位置が調整される。

【0009】図3にはビューファインダの本体側の分解斜視図、図1(a)にはビューファインダの要部断面図がそれぞれ示されている。図3、図1(a)において、上記本体ケース1は、アッパーケース部材1aとボトムケース部材1bと底カバー1cとから成る。この本体ケース1内には複数の本体側配線板5が収納され、この複数の本体側配線板5はスペーサ6等によって適宜のスペースを隔てて略平行に配置されている。各本体側配線板5には電子部品7等がマウントされて所望の回路がそれぞれ構成され、又、任意の本体側配線板5間はフレキシブル基板8やコネクタを介して電氣的に接続されている。

【0010】図4にはビューファインダの回転側の一部分解斜視図が示されている。図4、図1(a)において、LCD収納ケース2内にはLCDブロック体10が収納されている。このLCDブロック体10はバック基板11と第1ホルダ12と液晶表示体13と配線基板14と第2ホルダ15と表示用プレート16とが組み付けられて構成されている。バック基板11にはバックライト17が取り付けられている。配線基板14には表示用LED（図示せず）が取り付けられている。

【0011】また、LCD収納ケース2内の本体ケース1側には中継用配線板18が固定され、この中継用配線板18の一面にはコネクタ19が設けられ、このコネクタ19には液晶表示体13、バックライト17、表示用LED（図示せず）の配線、即ち、回転側電気部品の配線が接続されている。又、中継用配線板18の他面には2つのL型コネクタ20が設けられ、この2つのL型コネクタ20は、図1(b)に詳しく示すように、中継用配線板18の回転中心Cの近傍で、且つ、互いに向き合

うよう配置されている。この各L型コネクタ20には複数の信号ケーブル21の一端側が接続され、この複数の信号ケーブル21の他端側は本体側配線板5のコネクタ22に接続されている。即ち、中継用配線板18と本体側配線板5との間は複数の信号ケーブル21で電氣的に接続されている。又、複数の信号ケーブル21は1本のチューブ23内に通されて束ねられている。このチューブ23は、図1(a)に詳しく示すように、隣接する本体側配線板5間に配置され、中継用配線板18の略回転中心軸C上に位置されている。上記隣接する本体側配線板5間には半円弧状受け面24aを有するガイド部材24が固定され、このガイド部材24の半円弧状受け面24aにチューブ23が載置されている。チューブ23はガイド部材24で回転のみを許容された状態で位置決めされている。

【0012】次に、上記構成の作用を説明する。ビューファインダの覗き位置を可変するべくLCD収納ケース2等を図2の矢印方向に回転すると、LCDブロック体10と共に中継配線板5が同様に回転する。この回転によって本体側とを結ぶ複数の信号ケーブル21も回転するが、複数の信号ケーブル21はチューブ23で束ねられ、且つ、このチューブ23がガイド部材24によって位置決めされているため、回りの部品と干渉することなくスムーズに回転する。従って、複数の信号ケーブル21が断線することがない。又、チューブ23は中継用配線板18の略回転中心軸C上に位置するために、より回転がスムーズに行われる。そして、本体側と回転側との配線の引き回しは複数の信号ケーブル21で行うためコスト安であり、又、複数の信号ケーブル21をチューブ23で束ねて配するため狭い配線スペースで足りる。

【0013】また、中継用配線板18の2つのL型コネクタ20は、中継用配線板18の回転中心Cの近傍に配

置し、且つ、互いに向き合うよう配置したので、複数の信号ケーブル21が簡単に回転中心にまとまるため、中継用配線板18と本体側配線板5とのスペースD(図1(a)に示す。)を最小限に抑えることができる。

【0014】

【発明の効果】以上述べたように本発明によれば、本体側配線板を収納した本体ケースの先端側にLCD収納ケースを回転自在に設け、このLCD収納ケース内に液晶表示体を設けると共に中継用配線板を設け、この中継用配線板に前記液晶表示体を含む回転側電気部品の配線を導き、前記中継用配線板と前記本体が配線板との間を複数の信号ケーブルで接続し、この複数の信号ケーブルをチューブ内に通して束ね、このチューブをガイド部材で回転のみを許すべく位置決めしたので、液晶表示体内蔵のヒューファイナダにあって、本体側と回転側との配線の引き回しをコスト安で、且つ、狭いスペースで行うことができるという効果がある。

【図面の簡単な説明】

【図1】(a)はビューファインダの要部断面図、(b)は本体側と回転側との間の配線の引き回し状態を示す斜視図(実施形態)。

【図2】ビューファインダの外観斜視図(実施形態)。

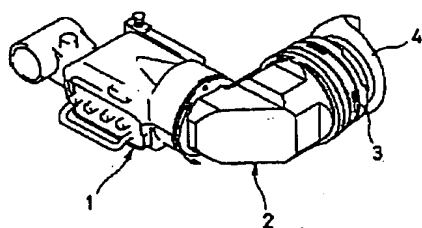
【図3】ビューファインダの本体側の分解斜視図(実施形態)。

【図4】ビューファインダの回転側の一部分解斜視図(実施形態)。

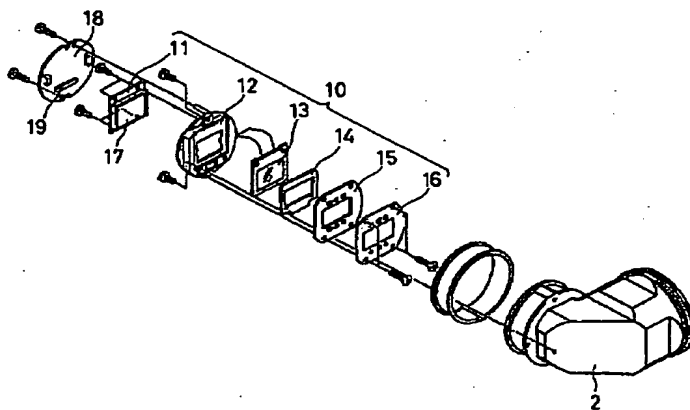
【符号の説明】

1…本体ケース、2…LCD収納ケース、5…本体側配線板、13…液晶表示体、18…中継用配線板、20…L型コネクタ(コネクタ)、21…信号ケーブル、23…チューブ、24…ガイド部材。

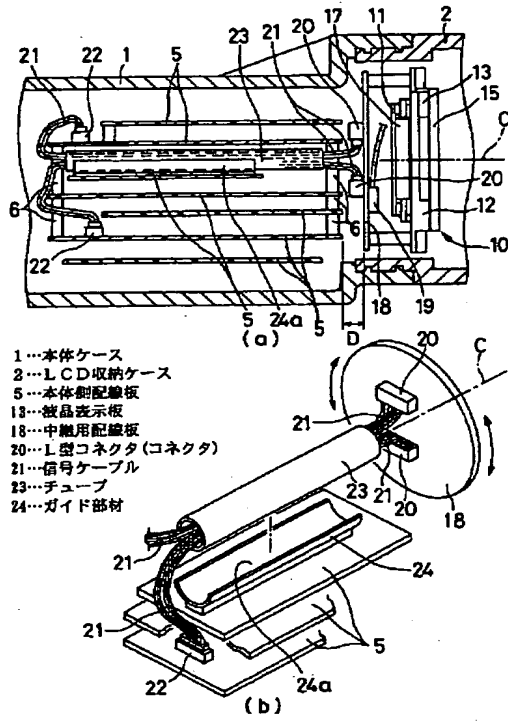
【図2】



【図4】



【図1】



【図3】

